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POLYPODIUM VULGARE IN MAINE

HENRY W. MERRILL

Maine with its 3,000 miles of rock-bound coast, its many mountains and almost numberless hills, the out-cropping ledges that show their granite heads so unexpectedly above its many plains, is an ideal home for the hardy little polypody, that carpets the top of most of the ledges, or hangs gracefully over their brinks, or nestles beneath some evergreen tree, whose branches spread out their protecting arms, and whose fallen needles clothe the ground with a soft mantle, which in time decays and furnishes the rich soil needful for the development of plant life.

A writer in speaking of *Polypodium vulgare* (L.) states that it is not ordinarily a variable fern and that only a few forms have been named.

In a British work, "Choice Ferns," there are thirty-five named forms. Although the old world may be favored with more forms than the new world,—or it may be that our brother botanist across the water is more given to form names than we are,—the number of forms that have been brought to light in this country within the past few years goes far to prove that we have many of them at home and by careful search we may hope to bring many more out from their ledgy homes.

It was but a few years ago that *P. vulgare* v. *auritum* (H. W. Jewell) and *P. vulgare* v. *cambricum* (Miss E. S. Shaw) were the only two forms known in Maine. The former was found at Farmington and the latter was reported from Mount Desert Island.

Some two years ago the writer was fortunate in finding *auritum*, soon to be followed by the discovery of *hastatum*. These finds were not confined to a single station, but were scattered over an extent of many miles, which

seems to be proof conclusive that these forms are to be expected at any station where the type is found. It was, indeed, a red-letter day when the writer found two fronds of what was afterwards determined as *Polypodium vulgare* v. *ovatum* (Moore). The long stipe and rather short blade, the graceful curve of the frond, the long tapering pinnæ, with their sinuate margins, with the background furnished by the mellow sunshine of a September day, formed a picture that will hang for many years on memory's wall.

Among the forms are found *elongata* (H. W. Jewell), *multifidum* (Moore), *ramosum* (Moore), *sinuatum*, with all of the pinnæ sinuate.

A station was found last fall (1909), under the low-spreading limbs of a hemlock, where the sun could only now and then shoot narrow rays of light for a form or freak, that was as "beautifully crisped and ruffled" as the *Polystichum acrostichoides crispum*, and it was with a sigh of regret that the few fronds gathered were placed in the press, for well we knew that the graceful ruffles would be ruined. This form was not confined to a few fronds, but there were hundreds of them, and no frond of the type was found with them.

Perhaps the most interesting find of any form of the species in this state was made last August by Mrs. A. E. Scoullar, at Standish. This proved to be *bifido-cristatum*. Druery describes it as follows: "Long, narrow, robust, crested; its short leaflets are fanned out at the tips into rounded crests, and the frond tip, repeatedly divided, forms a large, flat tassel."

Still another form has been found that, unlike *auritum*, which has ears on the lower side of the pinnæ, has ears on the upper edge of the pinnæ only. Mr. W. N. Clute says that this form is new and the finder is hunting for a name, but so far he has been unsuccessful.

Any one who is a fern enthusiast can spend many

pleasant hours with the polypods and will undoubtedly be rewarded by finding of one or more forms, not mentioning the many freaks that will be constantly appearing before him.

HIRAM, MAINE.

FERN LEAVES, FERNS AND FERN ALLIES

R. C. BENEDICT

The topic would scarcely seem to be one in need of much discussion, but as morphologists and palæobotanists have lately added a good deal to our knowledge of the subject, completely changing some of the old conceptions, a brief resumé will not be out of place.

There has been a large amount written about ferns in the last few years, particularly about their anatomy and evolution,—and consequently about their relationships to other groups of plants, such as the lycopods, equisetes, cycads, flowering plants, etc. Taking pteridophytes as a whole, the number of printed pages devoted to this collection of plants in the last five years is in the thousands,—and this estimate does not include taxonomic literature. Among those who have contributed largely on this topic are Professor Bower of the University of Glasgow, Professor Jeffreys of Harvard, Professor Scott of Cambridge, and Professor Campbell of Leland Stanford.

These and a large number of others have expressed no doubt as to the distinction between leaf and stem in our modern ferns. A fern leaf is a lateral appendage of a fern stem, and has three main characteristics: (1)